

no. 3	The Juniper	free in person - stamp by mail
Jan/ Feb 2005		
...freedom and gardening for sustainable living...		



"In our every deliberation, we must consider the impact of our next seven generations."

Imagine if we just thought more about even the next one or two generations. What kind of changes would we make? What kind of difference would it have on the future? Although, we should be (like this great Indian tribe) thinking at least seven generations ahead whenever we make any decision that might have even the smallest effect on the planet. Most of us don't think much past the coming effects of the next few moments...or so it seems. Or perhaps we do think more about our future and the future of the planet and the things we're doing to destroy our surrounding environment, but maybe we just don't know what to do about it. Maybe we feel hopeless and

uninformed, a little complacent and desensitized - apathetic because that's all we've known how to be for all these years. No one has shown us anything better, and mainstream media and our corporate-ruled surroundings sure aren't helping out much either. No one has ever demonstrated to us that it doesn't have to be like this, that there's a better life amongst all the rot and anguish of corporocracy - at least no one that has been taken seriously anyway. I have often found that the ones who really seem to have life figured out are usually considered the outcasts of society - the ones deemed crazy (or criminal) by a

The Juniper is a Family Geek Press production and will come out about 3 or 4 times a year. For more zines and info please write to: Dan Murphy c/o The Juniper PO Box 6352 Boise ID 83707 messylephant@hotmail.com
Find updates about The Juniper & The Family Geek Press along with other strange commentary at www.juniperbug.blogspot.com



The Juniper is a zine about learning to live the simple life. Gardening, farming, bikes, DIY, sustainable living are just a few of the topics discussed within its pages in an attempt to foster ideas and dialogue & to inspire folks to live more sustainable & fulfilling lives. Letters to the editor are encouraged & will be regarded & printed with permission in future issues. Thus if you have any experiences, thoughts, suggestions or comments you'd like to share, please send them my way. If you would like to help distribute The Juniper at a show, to your friends, thru your distro or in your store, please contact me. I'll send you a stack of copies or you can make your own.

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money and blood-driven system. There are those that have somehow risen above all that and are now living awesome and fulfilling lives, seemingly unaffected by the sludge of a modern world whirling out of control. That's not to say that everything is perfect for them and that they are 100% happy 100% of the time – that's just not possible. We will always have our moments of sadness and times for tears. Trials and tribulations will surely come. Bumpy roads are always going to be up ahead somewhere. But these things have their benefits too, and they don't have to be so scary and detrimental. We can make every moment a chance to grow, and each day can be full of opportunities to learn. **But first** we must unplug ourselves from our TV sets and internets, quit gawking over the tabloids and celebrity magazines, stop comparing ourselves to reality TV shows & advertisements, and get off the drugs (whatever they might be). Your life can be yours again – you can get it back.

Lately, I'm trying my hand at simplicity ...though at times it seems like it's not going so well. I'm trying to live the simple life, and my goal is to get back to the land – back to nature. I'm not anywhere near where I want to be, but the desire is there. This zine is just the beginning, or maybe it's a mode of transportation – a way to get there. It's here that I will map my journey, that way you can come along with me. Let's not be so frightened of something new. Let's not remain ignorant just because someone told us it was bliss, because I don't feel too blissful these days. Mostly I feel detached. So, here's to reattachment. Thanks for reading, and please stay with me. ♥ **DAN**



"I treat horses good, and I'm friendly to strangers." -Woody Guthrie

For those of you who were lucky enough to read the first issue of this zine and were wondering what became of the garden that I was writing about in my gardening journal, you should know that it didn't turn out to be a complete disaster after all.

First off, I didn't tell you about how after reading some stuff about permaculture, I took a plunge into the idea of chaotic gardening and scattered a bunch of random seeds all around the new rhubarb plant that my mom had just put into the ground in the back yard by the fence. The seeds I threw down were basil, mini-carrots, red poppy, cantaloupe and a few other flowering plants. I didn't even bother burying any of them (except for the cantaloupe) because I wanted it to feel as natural as possible – even though naturally those plants would probably never find themselves together, but who knows? I also neglected to tell you about how during the first week of June I was struck with a clock-is-winding-down type feeling and I tore up all the grass on the west side of the house and planted a few rows of yellow squash and bush beans (which sprouted quickly and were almost wiped out by a mysterious pest, but fortunately we were able to save most of them). It was something I had been meaning to do for weeks, but life had gotten in the way and it was frustrating me. I decided that a lack of planning and foresight wasn't a good enough excuse for dreams to be destroyed. Still, knowing that I would be leaving all my hard work behind and moving to Boise at the beginning of August had a depressing effect on me, so I tried to keep at it even though the fact that I wouldn't get to see the fruits of my labors loomed over my head.

When I left, I was excited to see bushy carrot tops almost ready to be pulled, big bean plants already making beans, bright yellow crookneck squash already being picked, cantaloupe vines spreading out & full of blossoms and basil plants shooting upward with enough leaves for me to take a few with me to make pesto as soon as I got settled into my new place. I left feeling proud of what little I was able to accomplish, but

In Good Tilth: A Publication of Oregon Tilth. A newspaper out of Oregon that covers issues like sustainable living, organic farming and food politics. **470 Lancaster Dr NE, Salem OR 97301 – www.tilth.org**

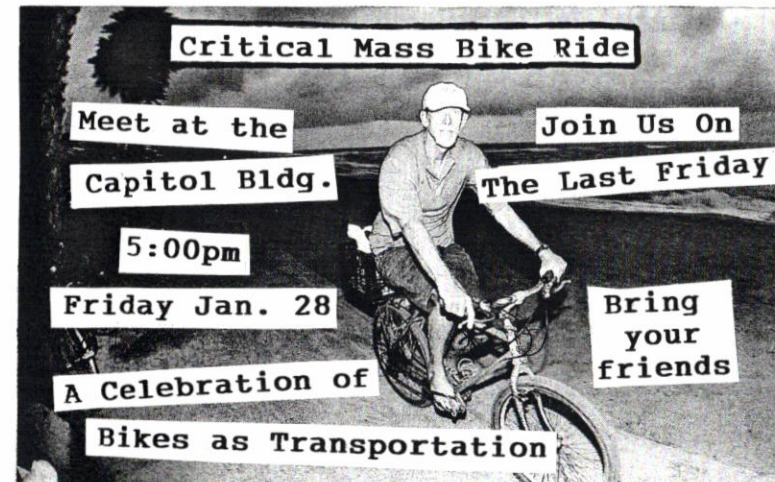
Permaculture Magazine: Solutions for Sustainable Living. Alternative (renewable) energy, organic gardening, permaculture, forest gardening, eco-building, eco-communities, minimalism, eco-education, community supported agriculture, ecology, etc. A magazine out of England covering issues and happenings all over the world. **The Sustainability Centre, East Meon, Hampshire GU32 1HR England – www.permaculture.co.uk**

Sprout Magazine Fall/Winter 2004 \$2 by mail The 2nd issue of the Boise areas organic, alternative health care and sustainable living journal. Includes stuff about recycling & precycling, saving energy, school lunch programs & facts about fats. **2309 Mountain View Dr. #170, Boise ID 83706 – www.sproutmagazine.com**

Friction #3 – More and more zines are starting to come out of the Boise area – this is one of the better ones (if not the best). Jackson's writing is passionate and emotional (even poetic) as he

discusses life as a teenager being surrounded by ignorance, apathy and conservatism. In this issue he and others share their feelings about the genocide in Sudan and the terrorism in Russia. He also reminds us of the unseen effects of seemingly innocent racist jokes and tells us of his experience attending the Portland Zine Symposium for the first time. Many other topics are unleashed such as fear, change, love and past friendships. So, write to Jackson, send him a buck or two and get his zine...communication is key. **Jackson Smith, PO Box 8266, Boise ID 83707 – frictionzine@gmail.com** Jackson also runs a small distro with more Boise zines: **www.geocities.com/loopholedistro**

The Cheap Vegan #17 \$1 – Being vegetarian or vegan is usually cheaper than eating meat, but there are also lots of fancy vegan foods & fake meats that can be just as (if not more) expensive than their meat counterparts. That's where The Cheap Vegan comes in. It's a zine "about eating, cooking and buying frugal vegan food," because not every vegan has Alicia Silverstone's bank account. In this issue: accidental trail mix, frozen vegetables, hot cereals, plus frugalizing & veganizing recipes. Back issues are also available. **Stephanie S., PO Box 981, Ft. Worth TX 76101 – <http://cheapvegan.cjb.net>** Stephanie also runs Fork 'n Spoon Distro which carries zines about food: **<http://diystore.cjb.net>**



Boise has a Critical Mass! Come ride with us on the last Friday of each month at 5pm in front of the Capital Bldg. We'll ride thru the streets of downtown. The February ride is on Feb. 25th. We'll see you there.

Recipes

If you have a recipe you'd like to share, please feel free to send it in. Here are a few that I had lying around. I can't remember where they came from otherwise I would give someone the credit for them.

Dandelion Coffee

Gather dandelion roots. Clean them well and let them dry thoroughly for several hours, at least. When they are dry, roast them in an oven preheated to 350 degrees until they are a rich, brown color. Next, grind them in a coffee grinder and prepare as you would regular coffee, using about 1 teaspoon powder for 1 cup water.

Avocado Hummus (Lebanon)

1 cup canned garbanzos
1 Tblspn tahini
juice of one lemon
4 Tblspns plain soy yogurt
3 Tblspns olive oil
1 clove garlic, crushed
2 large ripe avocados
sea salt & black pepper to taste

Blend in food processor – chill and serve with fresh, finely-chopped parsley sprigs.

Rice 'n Beans (Caribbean)

1 medium onion, chopped finely
2 Tblspns olive oil
½ lb. vegetarian burgers, cubed
1 small chili pepper, trimmed and seeded
3 tomatoes, chopped small
2½ cups coconut milk
1½ cups long grain rice
1 cup canned black-eyed peas or kidney beans, drained
sea salt & black pepper to taste

In a large saucepan, sauté the onion in the olive oil. Next add the burger cubes and toss until lightly browned. Add remaining ingredients, except the beans, and stir well. Bring to a boil.

Cover & simmer for 10 min. Stir in the beans & cook for 10 min. until rice is tender (add water if necessary). Season to taste.



The Juniper Classifieds

Advertise your zine, distro, book. Promote your band, sewing circle, club. Announce your tour, festival, show. Find penpals, friends, significant others. Sell your stuff to buy more stuff, or just use the space to speak your mind. \$3 gets you 30 words. It's cheap, so take advantage of it while you can. Write to me for details and deadlines.

Attn: All Zine Librarians & Zine Collectors

I've got stacks & stacks of zines that I'm willing to part with. I'll send a box to anyone willing to pay or split the postage...just let me know how many pounds you want or if you have any specific requests. Contact me care of The Juniper address or by email.

The BSU Publication Club

My friend Dave and I are starting a Publication Club here at Boise State University. We plan to put together a student magazine featuring a variety of student artists & writers. We also hope to help students pursue their personal publishing goals. If you are a BSU student or live in the Boise area & would like to get involved contact Dan & Dave: publicationclub@hotmail.com

Recommended Reading

Yes! Magazine: A Journal of Positive Futures. A magazine out of Washington State with a positive outlook in a negative land. Focusing on organizations and individuals and what they're doing to make the world a better place. **Positive Futures Network, 284 Madrona Way NE suite 16, Bainbridge Island WA 98110 – www.yesmagazine.org**

sad that it had to be over – uncertain when I'd ever get the chance to do it again.

Here in Boise I got wrapped up in school and work and everything else and the closest I've been able to get to gardening has been in my dreams and on bike tours (see issue #2). It's hard to stay excited about it or remember my passion for it when I can't be surrounded by it or immersed in it continuously. I often wondered what became of my gardening back in Mountain Home. It's only about 40 miles away, and yet it feels like the other side of the world. I hesitated to ask my family too much about it whenever we talked on the phone or when they were in town. I didn't want to sound pathetic by constantly asking about my gardens as if they were my children. Secretly I was hoping they would show up at my door with fresh basil or a bag full of beans & squash from the garden, but they never did. It's not their fault though. I'm sure if I would have asked them to they would have been glad to. I guess I felt like they deserved it more than I did. After all, I mostly only did it for the joy of doing it anyway.

It wasn't until Thanksgiving rolled around that I was finally able to go back to Mountain Home and see what had become of the gardens. Of course by this time most everything had been harvested, and most of the plants had been pulled up and the beds were covered with leaves in preparation for the cold winter ahead. But some of the carrots were still in the ground, and as I pulled a few of them up I was amazed to see some of the fattest, little carrots I've ever seen – so fat they were splitting at the seams. (I kept a few to take home.) Probably the most amazing sight to me though was the kohlrabi; it had actually grown(!) even after I had given up on it completely. Little bulbs(?) with big fat leaves shooting out of the sides of them like fireworks sat just above the frozen ground. The only disappointment was that they weren't right on the inside. When I cut one open it was somewhat transparent instead of milky colored, and it didn't taste right. I guess the freezing temper-

atures took their toll on them. Still I was happy to see that they had grown.

I guess my experimental gardening spree was somewhat of a success after all. The chives may have never come up, the basil plants flowered and rotted away and the kohlrabi froze to death, yet some good came out of it: beans & squash aplenty, a report on some strange-looking yet edible cantaloupe, fat, little carrots and the inspiration necessary to go on & keep dreaming. Until next garden...

A Journal Entry: Aug. 2, 2004

The end of gardening as I know it. Okay, so not really, but either way this gardening journal has been cut short this year (as I knew it would) since I am now heading off to live in a tiny apartment in Boise, and I'm leaving my beautiful Mountain Home gardens behind. Obviously I can't/won't be doing any gardening where I'm going to be living, so that's pretty disappointing. It's also sad that I won't get to see the gardens I've been working on here reach the end of the season – which is even worse 'cause they're actually starting to look pretty good. The beans are producing, there's lots of little squash growing, tons of tomatoes, grapes on the grapevine, lots of blossoms on the cantaloupe plants, basil growing tall and carrots just about ready to be pulled up. I guess things are working out better than I thought they would... I guess I should've put even more time into [the garden] and maybe it would be doing even better. It still remains a mystery when I'll actually get to have a garden of my own. For now I'm left to settle with a few basic potted plants. I have my aloe vera plant, a cheesy, little cactus that a co-worker gave to me, my bonsai seedling and a couple purple coneflower starts. My room doesn't look like it gets much sun, so I don't know how well any of those will do. My plan is to tour some local community gardens in Boise and continue dreaming of the day when I can finally have my own big garden. Dreams come true, but for now I'll just keep reading about it.

Manipulating Science for Love of Money

Last issue I was writing about science & scientists and how sometimes it's hard to trust that they are really working for the good of society. Corporate interests and power hungry politicians seem to have their way with scientists, manipulating their data and influencing their conclusions (by bribery or otherwise) so that tables will turn in their favor. It seems as though the general public can only hope that the policy makers and the heads of corporations are making the best decisions and running their companies humanely with public health and safety being a top priority. We tend to believe that they are because they've got science backing them up and keeping them in check – or do they?

All too often, industry and government choose to go against the warnings and recommendations of their scientists in order to do things their way. This means that scientific reports must be altered, whistle-blowing scientists and citizens must be silenced, and public eyes and ears must be plugged and turned.

Here's a few excerpts from a recent article found in High Country News entitled "Conscientious Objectors" that tells of government scientists and their fight against big government (the Bush administration) and industry which continue to silence, undermine and disregard the studies they have ordered to be done and the information they (we) are paying to receive.

"Leading the push to exempt energy companies from federal laws that protect the environment and public health are officials at the highest levels of the Bush administration, supported by the efforts of politically appointed regulators willing to ignore the findings of their own scientists, or even rewrite those scientists' opinions. And this is just one example of the challenges facing not only agency scientists, but all federal employees, as they come under pressure to subvert the very laws they are supposed to uphold and enforce. Field biolo-

gists, park superintendents, land managers and environmental regulators are all feeling the pinch of politics."

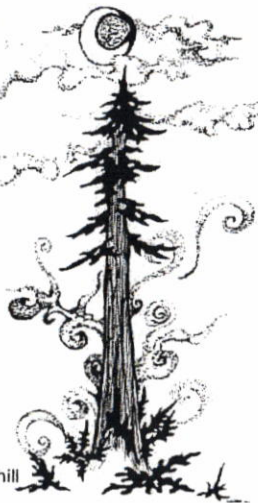
"Last February, 60 scientists, including Nobel laureates, former agency directors and university professors, released a statement contending that 'when scientific knowledge has been found to be in conflict with its political goals, the administration has often manipulated the process through which science enters into its decisions.' It does that, the statement says, by placing unqualified people with conflicts of interest in positions of power, by censoring and suppressing information from government scientists, and by failing to seek independent scientific advice. By November, more than 5,000 scientists had signed the statement."

read more:

High Country News: The Paper for People Who Care About the West, PO Box 1090, Paonia CO 81428 – www.hcn.org

When you see someone in a tree trying to protect it, you know that every level of our society has failed.

words and picture by julia butterfly hill



Soil is a basis of life. From the soil springs the plants and trees that eventually feed and shelter us and most other living beings on this planet. Farmers and gardeners alike know that without good soil, their crops will not provide the bountiful harvest that they are hoping for. While soil for the most part continues to be a

Gardening 2005

It's time to start thinking about this year's garden if you haven't already. It may only be January, but there is still lots of stuff you can be doing in the next couple of months in order to have a successful garden in 2005.

- 1.) Go through old seeds and decide what you're going to need. Thumb through seed catalogs and start ordering seeds & seed-starting supplies.
- 2.) If you keep a gardening journal, read back over what you were doing at this time last year and decide what you should change and what you should do the same.
- 3.) Draw out a plan of what you want this year's garden to look like. Remember to observe areas of your yard that are shady or sunny and plan accordingly.
- 4.) Start seeds of cool weather crops indoors (i.e. cabbage, cauliflower, lettuce, onions, leeks, Swiss chard, broccoli, kale, peas, kohlrabi, etc.)
- 5.) Tomatoes, peppers & eggplants can be started indoors in the warmer zones. If you live in a colder zone (2-5), hold off until March or April.
- 6.) Consult a gardener's almanac to find out what else you can be doing now & in the coming months. OrganicGardening.com sends out almanac emails each month that are specific to your zone.

Here is a seed-starting chart taken from OrganicGardening.com. Just find out when the last frost date usually is in your area and go from there. You can start all your seeds indoors, or you can wait until after the frost to sow directly into your garden.

YOUR SEED-STARTING PLAN

The Spring Frost-Free Date in My Garden is

CROP	WHEN TO START INSIDE	WEEKS FROM SOWING	SAFE TO SET OUT TIME (RELATIVE TO FROST-FREE DATE)	SETTING OUT DATE
Basil		6	1 week after	
Beets*		4-6	2 weeks before	
Broccoli		4-6	2 weeks before	
Cabbage		4-6	4 weeks before	
Cauliflower		4-6	2 weeks before	
Collards		4-6	4 weeks before	
Corn*		2-4	0 to 2 weeks after	
Cucumber		3-4	1 to 2 weeks after	
Eggplant		8-10	2 to 3 weeks after	
Kale		4-6	4 weeks before	
Kohlrabi*		4-6	4 weeks before	
Lettuce		4-5	3 to 4 weeks before	
Melons		3-4	2 weeks after	
Mustard*		4-6	4 weeks before	
Okra*		4-6	2 to 4 weeks after	
Onions		6-8	4 weeks before	
Parsley		9-10	2 to 3 weeks before	
Peas*		3-4	6 to 8 weeks before	
Peppers		6-14	2 weeks after	
Pumpkins		3-4	2 weeks after	
Spinach		4-6	3 to 6 weeks before	
Squash		3-4	2 weeks after	
Swiss chard		4-6	2 weeks before	
Tomatoes		6-8	1 to 2 weeks after	

* These crops are usually direct-seeded outdoors, but they can be started inside.



Debunk The Evil Monocult!

"We live in a westernized society where we are fortunate enough to be able to make a choice about the food we eat often without understanding or thinking about where that food has come from, how it was produced, the distance it has traveled, the energy and resources used to transport from different countries around the world and onto your plate. We have lost touch with nature...

"...working with the earth and having contact with the land really does encourage you to become aware of your surroundings and make you think about what you are putting into the earth and ultimately what you are pulling out of it, especially when you are growing vegetables to eat!! You begin to see how monoculture farming is and how intense farming methods are on the land and the consequences of that (i.e. genetically modified crops, chemicals, etc.)."

This is an excerpt from an article entitled "Why Animal Rights Still Matters" written by Steve and found in issue #34 of his zine **Attitude Problem**. You should check it out: PO Box 326, Leeds LS7 3YR England. (\$2)



Chickens In the City-the very basics

As food or friends they're great to have around. Here's some info on keeping chickens safe and healthy.

->You can get chickens from a hatchery in your area, search the internet or check the phone book. If there is a factory farm nearby, you can check on rescue birds, just ask.

->Chickens lay according to the number of light hours per day, more light (Summer)=more eggs--up to 1/day. In Winter, they lay less, sometimes not at all. Some people put a light in the coop to keep them laying--others think that's cruel. Avg. lay is 2 to 3 eggs every 3 days

->Chickens need fresh water every day and chicken food--buy it from the feed store or feed them grains and veggies. ->They love snails! and left over veggies--Food Not Bombs is their bestest friend.

->They love to come out and scratch around for bugs, but will destroy your garden--or be your chicken tractor, if you use a movable coop in early Spring.

->Chickenshit is great for compost.

->Raccoons & dogs think chickens are tasty, so make a coop you can lock at night. Some folks raccoon-proof the entire pen, in case they forget to lock up. Raccoon proofing means burying fencing 6" deep (maybe extending it 6" horizontally underground), covering the top and constructing a tight gate.

->Before you set all this up, check on local noise ordinance and zoning laws.

->Roosters are loud! (and they're loud, too) It is a myth that a rooster is necessary for hens to lay eggs, so to save your neighborhood some trouble just keep hens.

->Hens make noise, especially while laying, but most people wouldn't be bothered--still, ask neighbors first & give them some eggs.

This piece was borrowed from the Slingshot 2005 Organizer. **Slingshot Collective 3124 Shattuck Ave., Berkeley CA 94705** - <http://slingshot.tao.ca>



earthworms

"The plow is one of the most ancient & most valuable of men's inventions, but long before he existed the land was in fact regularly plowed, and still continues to be thus plowed by earthworms. It may be doubted whether there are many other animals which have played so important a part in the history of the world, as these lowly organized creatures."

-Charles Darwin, 1881

complex and mysterious ecosystem teeming with microscopic life and constant chemical interactions, soil scientists have discovered a number of characteristics that constitute healthy or quality soil. Generally speaking, these characteristics include "good texture and structure, high amounts of organic matter, and active soil life" (3).

Nature does a good job of keeping its soils healthy. Millions of microscopic organisms from protozoans to nematodes are at work in the soil breaking down dead plant and animal matter, ensuring that soil is loaded with the nutrients it needs to help things grow and giving soil the structure that is optimal for root growth. But many things (mostly human caused) can throw this balance off and cause a decline in the soil's health. Some of these things are industrial pollution, the compaction of the soil, the application of harmful chemicals and the disturbance of the soil by digging or tilling. While we cannot completely avoid disrupting the soil, we must learn to conserve and maintain healthy soils by protecting and replenishing them.

The soil is made up of many layers, thus when we speak of soil in an agricultural sense, we are most concerned with the top layer: topsoil. Topsoil is the layer of soil "that makes life on earth possible" (3). It is where most of the minerals and nutrients are stored and where the bacteria and fungi are hard at work creating and distributing those nutrients. Earthworms create pathways in the topsoil making it more penetrable for better water absorption and for expanded root growth. The average depth of healthy topsoil here in the United States is about 10 inches, yet there are many areas where the topsoil is thinner. It takes at least 100 years to create one inch of new topsoil under natural conditions, which is why each inch of topsoil is so precious and worth protecting (6).

The biggest threat to topsoil is erosion - a process that involves the carrying away of soil by wind or water. Poincelot states in his book, Toward a More Sustainable Agriculture, that

while "erosion is not a phenomenon unique to agriculture...what is unique to agriculture is the alarming rate of soil erosion." To prove this he points out that "present average rates of erosion usually exceed the average rate of soil formation by ten to one" (6). And so it seems we are fighting a losing battle, but considering that agriculture is "responsible for more than half of the soil erosion in the country," there are many things that can be done on the agricultural level to improve this ratio dramatically (3).

One of the main methods used to deter soil erosion is conservation tillage. Modern methods of tilling involve the use of "a moldboard plow that turns the top eight inches of the soil completely over, burying crop residue, and leaving the soil loose and prone to erosion." This is done in the spring to prepare the fields for planting. After harvest in the fall, the fields are often tilled again in preparation for winter. The frequent use of heavy machinery to till the soil combined with the use of other heavy machinery throughout the year such as harvesters and irrigation equipment can cause excessive compaction of the soil. When the soil becomes compacted, it is left more susceptible to erosion. Compacted soil does not absorb moisture as well and instead the water puddles up and runs off taking the topsoil with it. Conservation tillage, on the other hand, involves a reduction in tillage by "abandoning the moldboard plow and leaving crop residues on top of the ground to cover and protect it from wind and rain." Some farmers even opt for methods of farming which involve no tilling of the soil (3). According to Poincelot, "erosion associated with conventional tillage can be reduced 50-90% by a switch to conservation tillage." (6)

Multiple cropping and crop rotations also help to eliminate soil erosion. The opposite of multiple cropping is monoculture - growing a single crop on a plot of land. Multiple cropping involves growing a variety of crops together in the same field. There are many methods of multiple cropping which all involve the use of plants

that grow well together or compliment each other. These are known as companion plants because they both provide certain things that help the other plant grow better. An example of this is the companionship of beans and potatoes; the potatoes help to repel the Mexican bean beetle while the beans drive away the Colorado potato beetle and fix nitrogen into the soil which is a benefit to all surrounding plants (1). Soil erosion is curbed using this method because the soil is kept covered longer as each plant has a different planting and harvesting time. This is the same for crop rotation which involves never growing the same thing consecutively in the same field. Oftentimes crops may be grown throughout the winter using the system of crop rotation. The longer the soil is kept covered by plant growth, the less chance it has of eroding. The roots help hold the soil in place, and the foliage protects the soil from wind and heavy rains. This is a lesson we can learn by observing nature as "Mother Nature almost never leaves the soil uncovered; only on farms and in gardens do we see naked soil." (4)

Soil erosion is not the only thing threatening the health of the soil, as today much of the earth's soil is being degraded by something much more malignant. The beginning of the twentieth century brought a rise of new inventions claiming to make life simpler and more comfortable. While it's obvious that these new technologies were helpful and their promises of added convenience and efficiency rang true, many of them were accepted without fully questioning the negative impacts they might have on society and the environment. One such development was the use of chemicals in agriculture. Synthetic fertilizers and chemical pesticides and herbicides were introduced during a time when the nation was struggling to avoid economic collapse and environmental devastation. It was around the same time as the Dust Bowl (1930s) that many farmers felt compelled to turn to these new developments in farming that were arising in order to save their farms and

livelihoods. The health of the soil was declining rapidly and the unstable markets made competition too stiff to risk not harvesting the highest yields possible. Synthetic fertilizers promised high yields despite the health of the soil, and chemical pesticides and herbicides proved effective in fighting off pests and diseases that often destroyed entire fields. The face of modern farming was changing rapidly as more and more farmers (though at times reluctant) began to implement the larger farm machinery and the agricultural chemicals offered to them by the industrial world (2). But these adoptions would not come without a price.

In the book *The Next Green Revolution*, James E. Horne and Maura McDermott reiterate the fact that soil erosion isn't the only thing threatening healthy soil, "a greater threat is the attitude that soil is a lifeless medium for holding plants up and holding fertilizer" (3). Chemical fertilizers offer an inexpensive way (despite the rising costs of synthetic materials) for farmers to give their crops the nutrients they need. The effects of fertilizers on plants are immediate and thus a bountiful harvest is assured despite the possible poor health of the soil. This benefit causes farmers to become dependent on chemical fertilizers due to the fact that their yields must remain high in order to stay afloat in shifting markets and because the unhealthy soil of their fields may be too costly and take too many years to repair. These fertilizers do not add any nutrients to the soil that are not immediately taken up by the plants, thus the soil's health continues to decline because its nutrient reserves are never fully replenished (3). Another point to consider is that many synthetic fertilizers are made from nonrenewable resources, thus they are not guaranteed to be around for future generations. In order to ensure that agricultural soils are healthy for years to come, chemical fertilizers should be phased out and eventually replaced by sustainable alternatives.

Pesticides, fungicides and herbicides are also a threat to healthy soil. These chemicals are

intended to kill off pests, diseases and noxious weeds that might destroy a farmer's crops, yet their harmful effects go much further than just eliminating the bad guys. A pesticide or insecticide is not able to pick and choose between which pest or insect to kill and which to let live, instead all living things are potential victims to these poisons. According to Horne and McDermott, "insecticides can kill earthworms, soil anthropods such as mites, and beneficial ground beetles, all of which have crucial roles to play in maintaining healthy soil" (3). It is also possible for many pests and noxious weeds to develop a resistance to the chemicals. This means that each year a higher concentration of chemicals will need to be applied to kill off the pests, endangering more of the beneficial life forms within the soil. Alternatives to these harmful chemicals exist and their use can be greatly reduced simply by observing the balance found in nature. When an ecosystem is brought into balance, there will be little or no need for outside chemical interventions to control unwanted species, and the soil's health will be protected.

Overcoming the use of agricultural chemicals in a quest for healthier soil requires an investigation into the concept of sustainable agriculture – agronomy that focuses on the protection of agricultural lands for continued and future use. At the forefront of this movement are the organic farmers who understand the important role that soil plays in growing healthy and nutritious crops, thus they have developed a method of farming that does not require the use of synthetic inputs. The organic farming movement began to define itself in the late 1930s and as Randal S. Beeman and James A. Pritchard wrote in their book, *A Green and Permanent Land*, its "philosophy sought to see the topsoil and crops from a viewpoint of ecological interrelatedness, which would allow the organic farmer to emulate the natural growing conditions and fertility of nature" (2). Some things that make organic farming work are multiple cropping and rotations, the attracting of beneficial insects using

certain plants, and a continuous addition of compost and organic matter to the soil. Adding compost – a mixture of decaying plant matter – is easily the most basic and important thing that can be done to increase the health of the soil. Considering the extensive damage to the soil that conventional agriculture is causing, we must put more effort into adopting agricultural practices, like organic farming and permaculture, that strive "to maintain and increase the long-term fertility of soils" (5).

In 1908, author and horticulturalist Liberty Hyde Bailey wrote:

We often say that the farmer feeds all the people. He must do more than this: he must leave his part of the earth's surface in more productive condition than when he received it. This will be accomplished by a better understanding of the powers of the soil and means of conserving them, for every well-managed soil should grow richer rather than poorer; and, speaking broadly, the farm would have within itself the power of perpetuating itself (qtd. in 2).

For farmers to feed the world, they must first feed the soil. Luckily, the idea that soil is something that needs to be protected and cared for has become accepted by the general public since the devastating era of the Dust Bowl – a large step in the right direction. However, the direction that modern agriculture seems to be taking us today may only worsen the condition of the soil in the long run. Thus, it is time to stop placing so much emphasis on quick profits and labor-reducing machinery and focus more on building a sustainable soil for today and tomorrow.

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- 6.) Poincelot, Raymond P. *Toward a More Sustainable Agriculture*. Westport: AVI, 1986.

